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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/733,304

12/12/2003

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041514-5318

7325

55694 7590 05/20/2010
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EXAMINER

SHERMAN, STEPHEN G

ART UNIT

PAPER NUMBER

2629

NOTIFICATION DATE

DELIVERY MODE

05/20/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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DETAILED ACTION

1. This office action is in response to the amendment filed 22 April 2010. Claims 1-6 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al. (US 2002/0005842) in view of Honda et al. (US 6,950,114).

Regarding claims 1, Honda et al. (US 2002/0005842) disclose a display device including a display panel (Figure 1), wherein each field of an image signal is divided into a plurality of subfields (Figure 24 (a), (b), (c) and (d)), a total number of subfields in each said field is unchanged (Figure 24 shows 5 subfields are always used, thus the total number of subfields is always unchanged.), the display panel includes a plurality of pixel cells for a plurality of pixels respectively, and gray scale display is performed by based on the selectively causing emission in the pixel cells image signal for each of the subfields (Paragraph [0031]-[0032] explain that pixel cells are provided. Figure 3 and paragraph [0036] explain about all of the possible luminance values and paragraphs [0040] and [0066]-[0067] explain how the luminance values are associated with subfields.), and said emission takes place in each of the subfields such that said emission continues throughout each said field (Figure 24 shows that each subfield has an emission portion I, and thus emission takes place in each subfield and continues throughout the field.), the display device comprising:

a brightness frequency data circuit for generating frequency data indicating a number of pixels at each same brightnesses in a brightness distribution for each field of the image signal (Figures 1 and 2 and paragraphs [0036]-[0040] and [0042]-[0045])

explain that according to pixel data, the 1H line luminance distribution analyzing circuit 3 creates accumulated frequency data and a luminance distribution.);

a controller for dividing the brightness distribution into at least a first brightness region and a second brightness region, and adjusting the number of subfields belonging to the first brightness region and second brightness region based on the brightness frequency data associated with the first brightness region and second brightness region, respectively, without changing the total number of the subfields in each said field (Figures 4 and 24 and paragraph [0065] explain that the drive control circuit 2 selects the brightness distribution A, B, C and D based on the frequency data, where each A, B, C and D are divided into at least two brightness regions, where Figure 24 shows that the total number of the subfields used are unchanged in each said field, i.e. each are 5, while the order is adjusted as shown in Figure 24 meaning that the "number of subfields" are adjusted for the at least two brightness regions.); and

a multi-grayscale processing circuit (Figure 17, 33) for error diffusion processing or dither processing on the image signal for each field (Paragraph [0054] explains that error diffusion processing and dither processing is done by multi-gradation processing circuit 33. Since this processing is done on each line of the display in each field, then the processing is two-dimensional and is done each field.),

wherein the number of subfield employed for emission at respective brightness levels within each brightness region is adjusted (As already explained above, Figure 24 shows that the number of subfields used for different brightness regions changes between (a), (b), (c) and (d) based upon the frequency data.).

Honda et al. (US 2002/0005842) fail to teach wherein said brightness frequency data is generated only on a field-by-field basis.

Honda et al. (US 6,950,114) disclose a display device which has a brightness frequency data circuit for generating brightness frequency data indicating a number of pixels at each same brightness in a brightness distribution for each field of the image signal, said brightness frequency data is generated only on a field-by-field basis (Figure 5 shows the histogram memories where column 3, line 61 to column 4, line 7 explain that these accumulate brightness frequency data for a number of pixels only every field.).

Therefore, it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the teachings of only generating frequency data every field as taught by Honda et al. (US 6,950,114) with the display device taught by Honda et al. (US 2002/0005842) in order to allow for an easier overall compensation that reduces complexity of calculations.

Regarding claim 2, Honda et al. (US 2002/0005842) and Honda et al. (US 6,950,114) disclose the display device according to Claim 1.

Honda et al. (US 2002/0005842) also disclose wherein the controller increases the number of the subfields used for the brightness region when a number indicated by the brightness frequency data is larger than a predetermined value (Figure 4 shows that when the frequency data indicates that the brightnesses needed for the lower brightness region shown by BH_i of Classification B is larger than 0, for example, that this

pattern is used shown in Figure 24, which requires more subfields for the lower brightness region.).

Regarding claim 3, Honda et al. (US 2002/0005842) and Honda et al. (US 6,950,114) disclose the display device according to Claim 1.

Honda et al. (US 2002/0005842) also disclose wherein the greater a number of the subfields used for the brightness region, the more the controller shortens a period of emission of the pixel cells performed in each subfield (Figure 24 shows that the period for emission is longer for SF5 in (b) than in the period for emission for SF5 as shown in (a).).

Allowable Subject Matter

6. Claims 4-6 are allowed.

7. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance is the recitation of the "brightness frequency data circuit," "logarithmic conversion circuit," "clipping circuit," "cumulative brightness frequency data circuit," and the "delimiter value generation circuit" all working in conjunction with each other to produce the values which allow for the driving of the pixels, the structure not found singularly or in combination in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN G. SHERMAN whose telephone number is (571)272-2941. The examiner can normally be reached on M-F, 7:30 a.m. - 4:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen G Sherman/
Examiner, Art Unit 2629

18 May 2010